

What is claimed is:

1. A remaining battery capacity computation system comprising a remaining capacity computation apparatus being connected to an electrical equipment unit via a one line communication circuit, in which current flowing in the battery is detected by the connected electrical equipment unit, the detected current is transmitted to the remaining capacity computation apparatus via the communication circuit, the remaining capacity computation apparatus operates on the detected current transmitted via the communication circuit to compute remaining battery capacity, and the computed remaining capacity is transmitted to the connected electrical equipment unit via the communication circuit;
 - the connected electrical equipment unit having a current detection section which detects current flowing in the battery and outputs a detected current signal at a fixed transmission period to the communication circuit to transmit the detected current signal to the remaining capacity computation apparatus, and a remaining capacity receiving section which receives a remaining capacity signal input from the remaining capacity computation apparatus;
 - the remaining capacity computation apparatus having a remaining capacity computation section which operates on the detected current signal input from the connected electrical equipment unit via the communication circuit and computes remaining battery capacity, and a communication processing section which outputs the remaining capacity signal indicating the remaining battery capacity computed by the remaining capacity computation section to the communication circuit with prescribed timing to transmit the remaining capacity signal to the connected electrical equipment unit; and
 - the communication processing section provided in the remaining capacity computation apparatus outputting the remaining capacity signal to the communication circuit, timed after completion of the output of one detected current signal and until commencement of the output of the next detected current signal from the connected electrical equipment unit to the

communication circuit, for transmission of the remaining capacity signal to the connected electrical equipment unit.

2. A remaining battery capacity computation system as recited in claim 1
5 wherein the remaining capacity computation apparatus is housed in a battery pack which attaches to the connected electrical equipment unit in a detachable manner.

3. A remaining battery capacity computation system as recited in claim 1
10 wherein the connected electrical equipment unit has a remaining capacity display section, and this remaining capacity display section displays the remaining capacity received by the remaining capacity receiving section.

4. A remaining battery capacity computation system as recited in claim 1
15 wherein when remaining battery capacity drops below a set capacity, the connected electrical equipment unit switches power off.

5. A remaining battery capacity computation system as recited in claim 1
20 wherein when remaining battery capacity drops below a set capacity, the connected electrical equipment unit begins a shutdown procedure to switch power off.

6. A remaining battery capacity computation system as recited in claim 1
25 wherein the current detection section switches the detected current signal positive or negative to transmit charging current or discharging current to the remaining capacity computation apparatus via the communication circuit.

7. A remaining battery capacity computation system as recited in claim 1
30 wherein the current detection section outputs the detected current signal to the communication circuit with a transmission period of 100 msec to 10 sec.

8. A remaining battery capacity computation system as recited in claim 1
wherein the communication processing section outputs the remaining

capacity signal to the communication circuit at a rate of one remaining capacity signal after receiving a plurality of detected current signals.

9. A remaining battery capacity computation system as recited in claim 1
5 wherein the communication processing section outputs the remaining capacity signal to the communication circuit at a rate of one remaining capacity signal after receiving one detected current signal.

10. A remaining battery capacity computation system as recited in claim 1
10 wherein the current detection section averages detected current over the transmission period and outputs average current to the remaining capacity computation apparatus via the communication circuit.

11. A remaining battery capacity computation system as recited in claim 1
15 wherein the current detection section outputs current at the time of transmission to the remaining capacity computation apparatus.

12. A remaining battery capacity computation system as recited in claim 1
20 wherein the current detection section houses an A/D converter, which converts detected current to a digital signal, and outputs charging current to the communication circuit as a digital signal.

13. A remaining battery capacity computation system as recited in claim 1
25 wherein the current detection section distinguishes charging current and discharging current by positive or negative sign, and outputs the detected current signal to the communication circuit.

14. A remaining battery capacity computation system as recited in claim 1
30 wherein the remaining capacity computation apparatus detects battery voltage and uses battery voltage as well as current to compute remaining capacity.

15. A remaining battery capacity computation system as recited in claim 1 wherein the communication processing section is provided with a timer which stores timing information for output of the remaining capacity signal.

5 16. A remaining battery capacity computation system as recited in claim 15 wherein the timer stores a delay time (T2) in memory which is the time from commencement of output of the detected current signal until output of the remaining capacity signal.

10 17. A remaining battery capacity computation system as recited in claim 15 wherein the timer stores a delay time in memory which is the time from completion of output of the detected current signal until output of the remaining capacity signal.

15 18. A remaining battery capacity computation system as recited in claim 15 wherein the timer in the communication processing section detects a detected current signal and begins counting, the timer outputs a trigger signal when a set time interval has elapsed, and the communication processing section detects the trigger signal and outputs a remaining capacity signal indicating
20 the remaining capacity computed by the remaining capacity computation section to the communication circuit.

19. A remaining battery capacity computation system as recited in claim 15 wherein the communication processing section is provided with a counter
25 which counts the number of detected current signals received and outputs a trigger signal when the count reaches a set number, and the communication processing section detects the trigger signals output from both the counter and the timer to output the remaining capacity signal.

30 20. A remaining battery capacity computation system as recited in claim 15 wherein the communication processing section detects both the remaining capacity signal input from the remaining capacity computation section and the timer's trigger signal to output the remaining capacity signal.